

Title (en)

Protection of internal and external surfaces of gas turbine airfoils

Title (de)

Schutz der inneren und äusseren Oberfläche einer Gasturbinenschaufel

Title (fr)

Protection des surfaces internes et externes d'une aube de turbine à gaz

Publication

**EP 1077273 A1 20010221 (EN)**

Application

**EP 00306575 A 20000802**

Priority

US 37327199 A 19990811

Abstract (en)

A gas turbine airfoil (22) includes an internal cooling passage (34) defined by an internal airfoil surface (36), and an external airfoil surface (38). The gas turbine airfoil (22) is protected on both the internal airfoil surface (36) and the external airfoil surface (38). The internal airfoil surface (36) is protected by forming a diffusion aluminide protective layer (40) at the internal airfoil surface (36) of the internal cooling passage (34), with substantially no aluminum deposited on the external airfoil surface (38) during the step of forming. The external airfoil surface (38) is protected by depositing an overlay protective coating (44) on the external airfoil surface (38), with substantially no aluminum or diffusion aluminide between the overlay protective coating (44) and the external airfoil surface (38). The gas turbine airfoil (22) is operated in a gas turbine engine, and may later be removed for repair. Repair is accomplished by removing the overlay protective coating (44) from the external airfoil surface (38) of the airfoil (22), restoring the airfoil (22) dimensions as needed, and depositing a second overlay protective coating (44) on the external airfoil surface (38) of the gas turbine airfoil (22), with substantially no diffusion aluminide layer between the second overlay protective coating (44) and the external airfoil surface (38) of the airfoil (22). <IMAGE>

IPC 1-7

**C23C 10/04**; **C23C 30/00**

IPC 8 full level

**C23C 10/04** (2006.01); **C23C 30/00** (2006.01)

CPC (source: EP US)

**C23C 10/04** (2013.01 - EP US); **C23C 30/00** (2013.01 - EP US); **Y02T 50/60** (2013.01 - US)

Citation (search report)

- [X] WO 9705299 A1 19970213 - SIEMENS AG [DE], et al
- [A] EP 0761386 A1 19970312 - UNITED TECHNOLOGIES CORP [US]
- [A] US 5221354 A 19930622 - RIGNEY DAVID V [US]
- [A] PATENT ABSTRACTS OF JAPAN vol. 1997, no. 05 30 May 1997 (1997-05-30)

Cited by

EP1524328A1; SG125103A1; EP1329536A1; EP1273759A1; EP1544323A1; SG110045A1

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